ENVIRONMENTAL RESTORATION PROJECT

Frequently Asked Questions
Material Disposal Area H

March 2002

Q1. What are material disposal areas?
The 26 material disposal areas (MDAs) at the Laboratory are sites where waste material has been disposed of on the ground, or below the ground surface in excavated pits, trenches, or shafts.

Q2. How many MDAs are located at Technical Area 54?
Technical Area (TA)-54 is located in the east-central portion of the Laboratory on Mesita del Buey between Pajarito Canyon (south) and Cañada del Buey (north). During the late 1950s, the Laboratory, with approval of the US Atomic Energy Commission and upon recommendation of the US Geological Survey, selected TA-54 for disposal of Laboratory-derived waste. The site has functioned as a major storage and disposal facility with some permitted treatment for Laboratory-derived wastes since that time. There are four MDAs at TA-54, each of which was historically used to store and/or dispose of solid, sensitive (classified), hazardous, radioactive, or mixed waste generated at the Laboratory.

Q3. What are the four MDAs at TA-54?
MDA G, the first of the disposal areas, accepted its first shipment of radioactive waste in 1957 and is still in operation. DOE authorized MDA G for the disposal of low-level and transuranic (TRU) radioactive waste and certain radioactively contaminated infectious waste, asbestos-contaminated material, and polychlorinated biphenyls (PCBs) and for the temporary placement of TRU waste. The New Mexico Environment Department (NMED) issued a permit for the site to store mixed waste. **MDA L** operated from the late 1950s through 1985 for the disposal of liquid chemical wastes; a RCRA-permitted hazardous waste storage area is currently operated on the paved surface of MDA L. **MDA H** opened in 1960 and was used for the disposal of classified, noncontainerized, solid wastes, some of which were contaminated with residual radioactive, hazardous, and high-explosive constituents; MDA H is no longer operational but has not undergone formal closure. Finally, **MDA J** was operated from 1961 through 2001 for the disposal of administratively controlled solid wastes and for the storage and disposal of special wastes. MDA J is undergoing closure in fiscal year 2002 as a solid waste and special waste facility in accordance with New Mexico Solid Waste Management Regulations, 20 NMAC 9.1, Subpart V.

Q4. What is the impact of the other three MDAs on MDA H?
To date, there is no documented or observed impact from MDAs G, J or L on MDA H.

Q5. What is the status of MDA H?
MDA H (Potential Release Site [PRS] 54-004) will be the first of 10 mesa-top material disposal areas to undergo a corrective measures study to identify and evaluate different alternative corrective measures for future management of the site. NMED is reviewing the MDA H RCRA Facility Investigation report and has approved the corrective measure study plan for MDA H. The CMS Report is under preparation.

Q6. Where is MDA H located?
MDA H is located north of Pajarito Road at TA-54. MDA H is approximately one-third of an acre in size.

Q7. Describe the disposal shafts at MDA H.
MDA H contains nine inactive disposal shafts. Each shaft is cylindrical with a diameter of 6 feet and a depth of 60 feet. The shafts are filled with classified solid-form waste to a depth of 6 feet below the ground surface. The wastes in shafts 1 through 8 are covered by a 3-foot layer of concrete placed over a 3-foot layer of crushed tuff. The waste in shaft 9 is covered by 6 feet of concrete. To protect against the possible impacts of mesa-edge instability, all MDA H disposal shafts were located at least 50 feet from the rim of Pajarito Canyon (the nearest canyon).

Q8. Where is the regional aquifer located in relation to MDA H?
The bottoms of the waste disposal shafts at MDA H are at least 900 feet above the regional aquifer.

Q9. What are the contents of the shafts at MDA H?
On a mass basis, the major contributors to the MDA H inventory are metals. Metals include depleted uranium, lead, and beryllium. High explosive contaminated material, recording media (paper documents, film [developed], slides, magnetic computer tapes), and graphite are also large contributors to the mass of the inventory. The remainder of the inventory includes small percentages of unreacted fuel (consisting of various isotopes of uranium), lithium compounds, and plastics. MDA H also received a one-time disposal of a nonsolid-form waste when 40 lbs. of graphite-contaminated motor oil was placed in shaft 9. Much of the classified waste is non-hazardous; however, various hazardous chemicals, radionuclide-contaminated materials, and materials contaminated by high explosives were also disposed of at MDA H.

Q10. What is the geology where MDA H is located?
The geographic setting of TA-54 includes a thick, relatively dry unsaturated zone, which greatly restricts or prevents downward migration of contaminants in the liquid phase through the vadose zone to the regional aquifer. A semiarid climate with low precipitation and a high evapotranspiration rate, which limits the amount of moisture percolating into the disposal units, subsequently limiting or restricting the amount of water available to potentially leach radionuclides or other hazardous waste constituents. The canyon-mesa terrain also affects atmospheric conditions and ecological habitats.

Q11. What sampling methods were used at MDA H?
The following sampling methods were used during the RFI of MDA H: four vertical boreholes were drilled around the nine disposal shafts; 33 subsurface core samples were collected from the four boreholes and submitted for laboratory analysis. Metals, cyanide, volatile organic compounds, semi-volatile organic compounds, PCBs, pesticides, tritium, and radionuclides were analyzed. Eight sediment samples were collected from surface drainages around MDA H and analyzed for inorganic chemicals, cyanides, polychlorinated biphenyls (PCBs), pesticides, tritium, and radionuclides.

Q12. What chemicals did the sampling and analysis reveal?
The analytical results from the samples described above detected the release of tritium and low levels of vapor phase volatile organic chemicals in the subsurface. Methoxychlor was also detected at very low concentrations in channel sediments in the drainage leading from MDA H but does not appear to be related to a release, but due to routine pesticide application.

Q13. Is long-term groundwater monitoring planned?
The LANL hydrogeologic characterization program (as implemented through the LANL Hydrogeologic Work Plan) will determine the location of potential groundwater monitoring wells for TA-54 as a whole. Groundwater monitoring will be part of a mesa-wide ground water monitoring program.

Q14. What are the impacts to the groundwater?
Fate and transport modeling showed that no contaminants would reach the regional groundwater beneath MDA H in the 1000-year evaluation period.

Q15. What are the impacts to Albuquerque in the long-term?
None.

Q16. What has been the experience at other sites?
Mound, UMPTRA, St. Louis, Rocky Mountain Arsenal, and Rocky Flats have all implemented similar corrective applications involving waste containment with caps/covers and monitoring. These corrective actions are designed to meet site-specific conditions.

Q17. What is the EXISTING COVER ALTERNATIVE?
This corrective measure alternative proposes that the inventory remains in the shafts. The concrete/crushed-tuff covers would be retained and the site will remain fenced to provide protection against disturbance of the cover for a period of 100 year. Regardless of which corrective measure is chosen, closure/post-closure care requirements (groundwater monitoring, site maintenance, a cap, etc.) will have to be met, so this option alone will be inadequate.

Q18. What best-management practices would be used if the EXISTING COVER alternative were selected?
Best-management practices (BMPs) would be implemented to enhance the protective features currently at MDA H. The BMPs to the surface would include covering the shaft with a 6-in. gravel/soil mix, and revegetation of the area with shallow-rooting native grasses and plants. The site would have regular maintenance inspections. Pressure sensors and automatic shut-off valves would be installed in the two subsurface PVC water lines located north of MDA H to prevent potential infiltration of water through the cover from a breakage of the water line along Mesita del Buey road. Regardless of which corrective measure is chosen, closure/post-closure care requirements (groundwater monitoring, site maintenance, a cap, etc.) will have to be met, so BMPs will have to address these requirements if the alternative is chosen.

Q19. What is the ENGINEERED COVER ALTERNATIVE?
This corrective measure alternative proposes that the concrete caps remain in place, with the uppermost 3 ft of the concrete covering shaft 9 being removed to accommodate installation of the engineered evapotransporative (ET) cover. The site would remain fenced to provide protection against disturbance of the cover for 100 years, and maintained and inspected. Maintenance would include examining the cover for excessive erosion and ponding of water. Proposed monitoring would be sufficient to verify that the closure/post closure requirements are met.

Q20. What is the EXCAVATION ALTERNATIVE?
This alternative proposes the complete removal and off-site disposal of all waste at MDA H. The tuff adjacent to the shafts would be excavated to a depth of 62 ft below ground surface. An additional removal excavation depth of at least 10 ft is estimated for tritium-contaminated tuff at the base of shaft 4. The ground surface footprint of the excavation would be approximately 260 ft by 120 ft. Trenching would be conducted parallel to the line of the shafts and would take place in six foot increments to expose the line of shafts.

Q21. What happens to the waste if the EXCAVATION ALTERNATIVE were selected?
The waste would be removed from shafts and transported to temporary structures for sorting, declassification, characterization, and packaging. Due to security considerations, all activities through declassification would be conducted under the cover of temporary surface structures. For optimal worker safety, waste removal would be conducted using remote methods only in the area surrounding the existing shafts because of the presence of high explosives and reactive material in the shafts. All material removed from MDA H, except high explosives, would be disposed in an offsite permitted facility.

Q22. What is the STABILIZATION and Engineered Cover ALTERNATIVE?
This alternative proposes the use of currently available commercial stabilization technologies along with construction of an engineered cover to enhance or prolong the ability of the existing shaft configurations to inhibit potentially disruptive intrusion events, and further limit the infiltration of moisture. Both partial stabilization of the shafts and complete encapsulation of the shafts would be evaluated. Again, closure/post-closure care requirements will have to be met.